

Supplementary data

Table 1. Comparative study – Four columns

Mp	Theoretical Mw	Observed Mw	R2	Retention Time
180	180	-	0.9988	-
667	667	659		32.37
6100	6200	6300		29.85
9600	10000	9933		29.38
21100	21700	20229		28.36
47100	48800	46913		27.22
107000	113000	98191		26.20
194000	200000	200287		25.20
344000	366000	401314		24.25
708000	805000	635295		23.63

Table 2. Comparative study – Two columns

Mp	Theoretical Mw	Observed Mw	R2	Retention Time
180	180	181	0.9995	17.82
667	667	650		17.20
6100	6200	6415		15.90
9600	10000	9991		15.62
21100	21700	20425		15.16
47100	48800	43927		14.65
107000	113000	101128		14.09
194000	200000	209281		13.60
344000	366000	377800		13.21
708000	805000	652902		12.86

Table 1 and 2 are combined in main article

Table 3. System Precision for HPLC

Mp	Theoretical Mw	Calculated Mw	Standard deviation	%RSD	Retention time
180	180	192	1	0.6	17.88
107000	113000	114364	2242	2.0	14.14
708000	805000	747803	2327	0.3	12.91

Table 4. Summary table of accuracy for standard

Mp	Theoretical Mw	Observed Mw	% Error
180	180	191	6
107000	113000	112469	0.5
708000	805000	749356	7

Table 5. Accuracy study for samples

Sample Id	Cp	Dp	Observed MW	Observed Mn	PDi
Pulp	17.6	845	495341	74401	6.65
In-process	12.0	570	322930	117361	2.75
Fiber	5.7	266	126810	40930	3.10

Table 6. Method precision study

Chemist	Observed Mw	Observed Mn	Average of MWD = Mw / Mn	Standard Deviation	%RSD	Retention time
One	114364	78435	1.46	0.005	0.3	14.14
Two	112257	73885	1.52	0.069	4.6	14.15

Table 7. Robustness study – Summary table

Theoretical Mw	Average of observed Mw of six replicate each	%Error
Change in column temperature by +5°C		
180	188	4.5
113000	112809	-0.2
805000	729015	-9.4
Change in column temperature by -5°C		
180	188	4.5
113000	111966	-0.9
805000	743954	-7.6
Change in flow rate by +0.2ml		
180	187	4.0
113000	113046	0.04
805000	658281	-18.2
Change in flow rate by -0.2ml		
180	188	4.6
113000	115411	2.1
805000	707924	-12.1
Change in concentration of LiCl in DMAC by +20%		
180	186	3.4
113000	112648	-0.3
805000	693441	-13.9
Change in concentration of LiCl in DMAC by -20%		
180	190	5.7
113000	112360	-0.6
805000	733671	-8.9

Table 8. Solution stability study for standard with Mp = 107000

Time	Mw	Mn	PDi = Mw/Mn	Average PDi	Standard Deviation	%RSD
T0	116557	76367	1.526	1.542	0.015	1.51
T1	114915	74549	1.541			
T2	115595	75476	1.532			
T3	113761	71472	1.529			
T4	114145	74627	1.530			
T5	114388	73649	1.553			
T6	116482	76124	1.530			
T7	116099	76749	1.543			
T8	116611	74959	1.556			
T9	118718	76614	1.550			
T10	117681	74643	1.577			

Table 9. Solution stability study for fibre sample

Time	Mw	Mn	MWD = Mw/Mn	Average	Standard Deviation	% RSD
T0	151209	73367	2.06	2.135	0.124	5.03
T1	157434	78243	2.01			
T2	149102	73547	2.03			
T3	156181	75424	2.07			
T4	151823	75186	2.02			
T5	155160	67499	2.30			
T6	149955	65914	2.28			
T7	154275	72000	2.14			
T8	150821	71545	2.11			
T9	157525	67347	2.34			